Gold Canyon acquires gallium mining rights

Prospecting company **Gold Canyon** Resources **Inc** (Vancouver, BC, Canada; Tel: +1-604-682-3234) has formed a wholly-owned subsidiary, Gold Canyon Resources USA (based in Nevada), which (after exercising an option announced in May) has entered into a definitive 15-year lease agreement (renewable for up to 15 further years) for all non-gold/silver mineral interests of Tech Industries Ltd in the Cordero property in Humboldt County, NV, USA. This consists of 17 whole and fractional unpatented mining claims which cover the northeast trending, mineralized "M" fault zone in the Opalite Mining District (once the site of North America's largest mercury mine).

The Cordero property has the potential to become the only mine in the world which produces gallium as its primary product. Gold Canyon hopes to be able to use the SX-EW (Solvent Extraction – Electro Winning) process typically used in copper oxide deposits.

Gold Canyon Resources USA has also entered into a 15-year lease agreement (with three additional five-year renewal terms thereafter) for all non-gold/silver mineral interests of Tech Industries in the adjacent Caley property (consisting of 70 unpatented mining claims), providing space to develop infrastructure for potential mine production, waste disposal and associated facilities.

Pictured - High-grade Cordero area "M" fault zone (gallium assays in grams per metric tonne).

Surface samples have confirmed the potential for high-grade gallium mineralisation, with a peak value of 222.6 grams per metric tonne and an average of 82.5 g/t over an area at least 1700 x 135 m. Historic mining activities have encountered visually similar mineralization to depths of 500 feet.

Geochemical sampling in Nevada by a previous operator identified two significant anomalies with gallium values of 10-50 ppm, separated by a zone of thin alluvium almost 1000 m in extent.

The Cordero property covers a large calcine pile (waste from earlier mining) estimated to contain 200,000-300,000 metric tonnes of crushed rock. Sampling indicates an average gallium content of 32 g/t of gallium (i.e. 6,300-9,600 kg of gallium metal).

This may provide "Fast Track" gallium production, while progressing with exploration, development and permitting activities on the larger and higher-grade "M" Fault Zone.

AXT hit by cancellations

AXT Inc (Fremont, CA, USA) has received significant product cancellations from several large GaAs customers that will lower sales 36% for Q3/2001 to US$26-28m (due to its Supply Guarantee program contractual agreements, customers needed to notify AXT by end-May for September-quarter shipments).

However, its forecast for record sales of US$41m in Q2/2001 is unchanged.

Picogiga returns to growth

For Picogiga Group (Villejust, France) sales were €4.57m for Q2/2001 (up 10% on both Q1/2001 and Q2/2000):
€3.66m for Picogiga and
€0.91m for Picopolish (20% of the Group).

For first-half 2001 sales were €8.75m (up 4% on H1/2000, despite Q1/2001 having been 23% down on Q1/2000 – see Issue 5, page 18 – and chairman and CEO Linh Nuyen saying as recently as June that H1/2001 would be down on H1/2000).

"Zt is clear that during unstable periods, a larger range of products and services ensures and stabilizes growth," says Nuyen. As well as Picopolish now being fully operational, Finnish opto start-up Modulight (acquired last year) will begin its production phase in its new factory in September.

Picogiga says that it is also developing new products based on phosphides and nitrides.

First-phase sapphire expansion completed

The Electronic Materials business of Honeywell (Sunnyvale, CA, USA) has completed a US$12m first-phase expansion at its facility in Victoria, BC, Canada for production of Czochralski-grown sapphire substrates for high-brightness LEDs.

A Phase II expansion has already begun (for completion by end-2001) that will double capacity, allowing production of more than 300,000 substrates annually.

Next-generation sapphire product development will also be enhanced.

Epichem opens extension

In July **Epichem** officially opened its £3m expanded production facilities in Bromborough, UK, creating 40 jobs (a 50% rise in staff from 100 now, with a further 50% planned in the next two years).

The new trimethylgallium plant can produce 5 tonnes per year (joining the existing 1 tonne per year plant). Capacity for silane and boron trichloride has been doubled.

In January 2002, Epichem's new labs will be ready, enabling the existing labs to be used for production.

* Epichem is also constructing a US$5m expansion of its manufacturing plant in Haverhill, MA, USA, for completion in April 2002.

4" multi-wafer MOCVD for InP

AIXTRON (Aachen, Germany) has released 5x4"/8x4" MOCVD technology for InP microelectronics.

"Very soon 4" will be dominating the market as has happened earlier on with GaAs," said president Dr Holger Juergensen. He also expects InP-based optoelectronics to move quickly from 3" to 4".

AIXTRON customers exploring InP technology include Ommic, VPEC and SEC, with Kopin currently growing carbon-doped InP HBTs.

* Recent AIXTRON orders include:

• The **Institute of Electronic Materials Technology** (Warsaw, Poland) has ordered an AIX 200/4 RF-S GaN MOCVD system – the first commercial GaN MOCVD system in Poland - to grow lasers and LEDs (joining its existing AIX 200 system for GaAs and InP). The reactor will play an important role in the Polish GaN project.

"In future, we plan to purchase another AIX 200/4 system for the fabrication of InP-based structures," said Head of ITME Dr Zygmunt Luczinsky.

• **Virginia Tech** has bought an AIXTRON 200/4 RF-S GaN MOCVD system.

Professor Louis Guido, head of the GaN team within the departments of Materials Science and Engineering and Electrical and Computer Engineering, states: "The group will focus on the growth mechanisms of Group III Nitride alloys and heterostructures and on the application of these materials in optoelectronic devices".

The design of the reactor for all kinds of in-situ monitoring will combine growth of highest-quality nitride-based structures with sophisticated optical investigations inside the reactor, he adds.

• **Showa Denko** has purchased another automated AIX 2600G3 Planetary Reactor System (with a wafer configuration of 8x4" or 5x6"), qualified for its 4" technology. It will fabricate structures for the wireless communication market.

* AIXTRON has sold its 100th MOCVD system with automated wafer handler to **Agilent Technologies** (UK).

Equipments & Materials Processing

[illegible]'s Queen's Birthday Honours List in the UK, OSEA's [illegible] awarded to:

• Dr Drew Nelson, chairman and CEO of IQE plc (Cardiff, Wales, UK);

[illegible] Lester, MD of Epitaxial Products International Ltd (EPI), which has previously received The Queens Award for Enterprise on three occasions (the last in May 2000).

[illegible] ATMI, Inc (Danbury, CT, USA) has revised its sales forecasts for 2Q to 20% below the US$51.4m of a year ago and for fiscal 2001 to 10-15% below fiscal 2000. However, it expects gradually increasing demand in Q3 and Q4.

Applied Epi (St Paul, MN, USA) says that RF Micro Devices has qualified its Applied Epi GEN2000 MBE system for production (for growth of HBTs). "This is now the second GEN2000 to be qualified and growing high quality wafers," said Applied Epi president David Brunner. "The GEN2000 being used by RFMD and the previously qualified IQE GEN2000 are currently the highest-capacity MBE systems in the world."

Alpha Industries (Fairfield, CA, USA) has selected Temescal FCE 4700 evaporation systems from BOC Coating Technology to further its growth for broadband and wireless applications. Temescal has now sold more than 40 evaporator systems into the wireless or opto sector this year.

Leica Microsystems has been chosen to supply electron-beam lithography tools to 6" GaAs foundry WIN Semiconductors Corp (Taipei, Taiwan) – its third installation in Taiwan recently.

Tegal Corp (Petaluma, CA, USA) has delivered a follow-on order for a 903e plasma etch system from WIN Semiconductors following installation of a first in September 2000 for pHEMT MMICs and HBTs.

New MOCVD tools from EMCORE

EMCORE (Somerset, NJ, USA) has launched the Enterprise 300LDM for datacom and telecom applications and the Enterprise 450 series TurboDisc reactors for wireless communications and solid-state lighting. By using optical control technology, EMCORE says they maximize the efficiency of material usage, reduce cycle times and achieve materials quality that enables next generation devices.

The E450 (which grows HBT, pHEMT and LED materials) provides a level of process control and reliability formerly unavailable for large-scale MOCVD production tools.

The E300LDM (the largest yield-producing laser diode tool on the market) allows the development of long-wavelength, infra-red and visible lasers and VCSELs.

TurboDisc Tools Division vp Paul Rotella adds, "*This expansion of our Enterprise line features our RealTemp optical control technology, which allows materials manufacturers to improve the quality of highly sensitive materials, and facilitates a more efficient, accurate and cost-effective production process while improving yield with less downtime.*"

* EMCORE has bought its second EnChem wastewater system from **Microbar**. The equipment removes both fluoride and arsenic from process waste streams.

RF test time cut by 80%

Amkor Technology Inc (Chandler, AZ, USA) has developed an RF device testing platform which uses proprietary software to optimize standard instrumentation systems and reduce RF testing times by as much as 80% compared to typical configurations of automatic test equipment: dual-band power amplifiers in 470 ms (cf 1.8 s); low-noise amplifiers in 170 ms (cf 1.3 s).

Amkor will use the new test systems exclusively in its contract testing services and will not sell them on the market.

Fully automated bonding and de-bonding system

EV Group (EVG, Austria) has introduced the EV850 fully-automated bonding and de-bonding system for compound semiconductors, which can be laid out for either dry adhesive films or spin-on intermediate layers like wax.

The robotic system performs temporary bonding of fragile and and ultra-thin wafers (up to 6" in diameter) on coated carriers that can be completely processed and later de-bonded and removed from the carrier.